

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) An isolated population of insulin-producing cells obtained from non-insulin-producing cells ~~made~~ by a process comprising contacting, ~~for at least twenty-four hours,~~ the non-insulin producing cells for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein a growth factor the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of the preceding GLP-1 peptides, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof, wherein the GLP-1 peptide or fragment thereof has amino acid sequences substantially homologous to GLP-1 and fragments thereof comprise residues H⁷, G¹⁰, F¹², T¹³, and D¹⁵ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.
2. (currently amended) The population of claim 1, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vitro*.
3. (currently amended) The population of claim 1, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vivo*.
4. (canceled)
5. (original) The population of claim 1, wherein the non-insulin producing cells comprise pancreatic cells.

6. (original) The population of claim 1, wherein the non-insulin producing cells comprise pancreatic acinar cells.
7. (original) The population of claim 1, wherein the non-insulin producing cells comprise stem cells.
8. (original) The population of claim 1, wherein the non-insulin producing cells comprise pancreatic stem cells.
9. (currently amended) The population of claim 1, wherein the non-insulin producing cells are comprise mammalian cells.
10. (currently amended) The population of claim 9, wherein the mammalian cells ~~are~~ comprise human cells.
11. (canceled)
12. (currently amended) An isolated population of insulin-producing cells obtained from non-insulin-producing cells ~~made~~ by a process comprising contacting, ~~for at least twenty four hours,~~ the non-insulin-producing cells for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein a growth factor the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of the preceding Exendin-4 peptides, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof, wherein the Exendin-4 peptide or fragment thereof has amino acid sequences substantially homologous to

~~Exendin-4 and fragments thereof comprise residues H¹, G⁴, F⁶, T⁷, and D⁹ of Exendin-4 and~~
have the ability to differentiate non-insulin producing cells into insulin producing cells.

13. (currently amended) The population of claim 12, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vitro*.

14. (currently amended) The population of claim 12, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vivo*.

15. (canceled)

16. (original) The population of claim 12, wherein the non-insulin producing cells comprise pancreatic cells.

17. (original) The population of claim 12, wherein the non-insulin producing cells comprise pancreatic acinar cells.

18. (original) The population of claim 12, wherein the non-insulin producing cells comprise stem cells.

19. (original) The population of claim 12, wherein the non-insulin producing cells comprise pancreatic stem cells.

20. (currently amended) The population of claim 12, wherein the non-insulin producing cells ~~are~~ comprise mammalian cells.

21. (currently amended) The population of claim 20, wherein the mammalian cells ~~are~~ comprise human cells.

22. (canceled)

23. (currently amended) A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting, ~~for at least twenty-four hours,~~ the non-insulin producing cells for at least twenty-four hours with a growth factor an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of the preceding GLP-1 peptides, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof, wherein the GLP-1 peptide or fragment thereof has amino acid sequences substantially homologous to GLP-1 and fragments thereof comprise residues H⁷, G¹⁰, P¹², T¹³, and D¹⁵ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.

24. (canceled)

25. (currently amended) The method of claim 23, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vitro*.

26. (currently amended) The method of claim 23, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vivo*.

27. (currently amended) A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting ~~for at least twenty-four hours,~~ the non-insulin producing cells for at least twenty-four hours with a growth factor an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid

substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of the preceding Exendin-4 peptides, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof, wherein the Exendin-4 peptide or fragment thereof has amino acid sequences substantially homologous to Exendin-4 and fragments thereof comprise residues H¹, G⁴, F⁶, T⁷, and D⁹ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.

28. (canceled)

29. (currently amended) The method of claim 27, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vitro*.

30. (currently amended) The method of claim 27, wherein the non-insulin producing cells are contacted with the ~~growth factor~~ substance *in vivo*.

31. (currently amended) A method of enriching a population of cells for insulin-producing cells, comprising contacting[[,]] non-insulin-producing cells for at least twenty-four hours[[,]] with an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and fragments of any of the preceding peptides, wherein the peptides or fragments thereof ~~the population of cells with GLP-1, or exendin-4, growth factors having amino acid sequences substantially homologous to GLP-1 or exendin-4, or fragments thereof, that differentiate non-insulin-~~

producing cells into insulin-producing cells, wherein the amino acid sequences substantially homologous to GLP-1 or Exendin-4 and fragments thereof exclude hepatocyte growth factor and comprise residues H⁷⁽⁺⁾, G⁺¹⁰⁽⁴⁾, F⁺¹²⁽⁶⁾, T⁺¹³⁽⁷⁾, and D⁺¹⁵⁽⁹⁾ of GLP-1 and Exendin-4 and have the ability to differentiate non-insulin-producing cells into insulin-producing cells.

32. (currently amended) A method of promoting pancreatic amylase producing cells to produce insulin, comprising contacting ~~for at least twenty-four hours~~, the pancreatic amylase-producing cells for at least twenty-four hours with a ~~growth factor~~ an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of the preceding GLP-1 peptides, ~~growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof~~, wherein the GLP-1 peptide or fragment thereof has amino acid sequences substantially homologous to GLP-1 and fragments thereof comprise residues H⁷, G⁺¹⁰, F⁺¹², T⁺¹³, and D⁺¹⁵ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.

33. (currently amended) A method of promoting pancreatic amylase producing cells to produce insulin, comprising contacting ~~for at least twenty-four hours~~, the pancreatic amylase-producing cells for at least twenty-four hours with a ~~growth factor~~ an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of the preceding Exendin-4 peptides, ~~growth factors having amino acid sequences~~

~~substantially homologous to Exendin-4, or fragments thereof, wherein the Exendin-4 peptide or fragment thereof has amino acid sequences substantially homologous to Exendin-4 and fragments thereof comprise residues H¹, G⁴, F⁶, T⁷, and D⁹ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.~~

34. (currently amended) A method of inducing insulin secretion in a subject lacking insulin-producing cells, comprising administering to the subject ~~a growth factor~~ an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of the preceding GLP-1 peptides ~~growth factors having amino acid sequences substantially homologous to GLP-1, and fragment thereof, wherein the GLP-1 peptide or fragment thereof has amino acid sequences substantially homologous to GLP-1 and fragments thereof comprise residues H⁷, G¹⁰, F¹², T¹³, and D¹⁵ of GLP-1 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.~~

35. (canceled)

36. (currently amended) A method of inducing insulin secretion in a subject lacking insulin-producing cells, comprising administering to the subject ~~a growth factor~~ an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of the preceding Exendin-4 peptides ~~growth factors having amino~~

~~acid sequences substantially homologous to Exendin-4, and fragment thereof~~, wherein the Exendin-4 peptide or fragment thereof has amino acid sequences substantially homologous to Exendin-4 and fragments thereof comprise residues H¹, G⁴, F⁶, T⁷, and D⁹ of Exendin-4 and have the ability to differentiate non-insulin producing cells into insulin-producing cells.

37. (currently amended) The method of claim 36, wherein the ~~growth factor~~ substance is administered by multiple bolus at least once injections sufficient to maintain an effective amount of the substance.

38. (canceled)

39. (withdrawn) A method of treating diabetes in a subject, comprising

- (a) obtaining non-insulin producing cells from the subject being treated;
- (b) contacting the non-insulin producing cells with a growth factor, thereby

differentiating non-insulin producing cells into insulin-producing cells; and

- (c) administering the insulin-producing cells from step (b) to the diabetic subject.

40. (withdrawn) The method of claim 39, wherein the non-insulin producing cells are pancreatic cells.

41. (withdrawn) The method of claim 39, wherein the non-insulin producing cells are stem cells.

42. (withdrawn) A method of treating diabetes in a subject, comprising

- (a) obtaining non-insulin producing cells from the subject being treated;

- (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
- (c) altering the surface antigens of the insulin producing cells of step (b), thereby reducing the likelihood that the insulin producing cells will cause an immune response; and
- (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

43. (withdrawn) The method of claim 42, wherein the non-insulin producing cells are pancreatic cells.

44. (withdrawn) The method of claim 42, wherein the non-insulin producing cells are stem cells.

45. (withdrawn) A method of treating diabetes in a subject, comprising

- (a) obtaining non-insulin producing cells from a donor;
- (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells; and
- (c) administering the insulin producing cells from step (b) to the diabetic subject.

46. (withdrawn) The method of claim 45, wherein the donor is a cadaver.

47. (withdrawn) The method of claim 45, where the non-insulin producing cells are pancreatic cells.

48. (withdrawn) The method of claim 45, wherein the non-insulin producing cells are stem cells.

49. (withdrawn) A method of treating diabetes in a subject, comprising
- (a) obtaining non-insulin producing cells from a donor;
 - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
 - (c) altering the surface antigens of the insulin producing cells, thereby reducing the likelihood of that the insulin producing cells will cause an immune response; and
 - (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.
50. (withdrawn) The method of claim 49, wherein the donor is a cadaver.
51. (withdrawn) The method of claims 49, wherein the non-insulin producing cells are pancreatic cells.
52. (withdrawn) The method of claim 49, wherein the non-insulin producing cells are stem cells.